

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A semiconductor device, comprising:  
a drain electrode;  
a source electrode;  
a channel contacting the drain electrode and the source electrode, wherein the channel includes a first binary oxide selected from SrO and CaO and a second binary oxide selected from CdO, ZnO and MgO ~~a first group of CdO, SrO, CaO, and MgO~~;  
a gate electrode; and  
a gate dielectric positioned between the gate electrode and the channel.
2. (Canceled)
3. (Currently Amended) The semiconductor device of claim [[2]] 1, wherein the channel includes an atomic composition of a first metal (A):second metal (B) ratio (A:B), wherein A and B are each in a range of about 0.05 to about 0.95.
4. (Currently Amended) The semiconductor device of claim 1, wherein ~~the first group includes ZnO, and~~ the channel includes a third binary oxide from ~~the first group of~~ ZnO, CdO, SrO, CaO, and MgO and having an atomic composition of a first metal:second metal:third metal ratio of A:B:C, wherein A, B, and C are each different and each in a range of about 0.025 to about 0.95.

5. (Currently Amended) The semiconductor device of claim 4, wherein the channel includes the first binary oxide, the second binary oxide, the third binary oxide, and a fourth binary oxide selected from ~~within the first group~~ ZnO, CdO, SrO, CaO, and MgO and having an atomic composition of a first metal:second metal:third metal:fourth metal ratio of A:B:C:D, wherein A, B, C, and D are each different and each in a range of about 0.017 to about 0.95.
6. (Currently Amended) The semiconductor device of claim 1, wherein the channel includes the first binary oxide and the second binary oxide selected from within one of ~~the~~ a first group of ZnO, CdO, SrO, CaO, and MgO and a second group of In<sub>2</sub>O<sub>3</sub> and Ga<sub>2</sub>O<sub>3</sub>.
7. (Currently Amended) The semiconductor device of claim 6, wherein the channel includes the first binary oxide and the second binary oxide selected from within one of the first group of ZnO, CdO, SrO, CaO, and MgO, the second group of In<sub>2</sub>O<sub>3</sub> and Ga<sub>2</sub>O<sub>3</sub>, and a third group of SnO<sub>2</sub>, GeO<sub>2</sub>, PbO<sub>2</sub>, and TiO<sub>2</sub>.
8. (Original) The semiconductor device of claim 7, wherein the channel includes the first binary oxide, the second binary oxide, and a third binary oxide selected from within the third group SnO<sub>2</sub>, GeO<sub>2</sub>, PbO<sub>2</sub>, and TiO<sub>2</sub> and having an atomic composition of a first metal:second metal:third metal ratio of A:B:C, wherein A, B, and C are each different and each in a range of about 0.025 to about 0.95.
9. (Original) The semiconductor device of claim 8, wherein the channel includes the first binary oxide, the second binary oxide, the third binary oxide, and a fourth binary oxide selected from within the third group SnO<sub>2</sub>, GeO<sub>2</sub>, PbO<sub>2</sub>, and TiO<sub>2</sub> and having an atomic composition of a first metal:second metal:third metal:fourth metal ratio of A:B:C:D, wherein A, B, C, and D are each different and each in a range of about 0.017 to about 0.95.

10. (Original) The semiconductor device of claim 1, wherein the channel includes one of an amorphous form, a single-phase crystalline form, and a mixed-phase crystalline form.

11. (Original) The semiconductor device of claim 1, wherein at least one of the drain electrode, the source electrode, the channel, and gate electrode, and the gate dielectric are substantially transparent.

12. (Currently Amended) A semiconductor device, comprising:  
a drain electrode;  
a source electrode;  
means for carrying electron flow to electrically couple the drain electrode and the source electrode, wherein the means for carrying electron flow includes a first binary oxide selected from SrO and CaO and a second binary oxide selected from CdO, ZnO and MgO ~~a first group of CdO, SrO, CaO, and MgO~~;  
a gate electrode; and  
a gate dielectric positioned between the gate electrode and the channel.

13. (Canceled)

14. (Previously Presented) The semiconductor device of claim 12, wherein the means for carrying electron flow includes an atomic composition of a first metal(A):second metal (B) ratio (A:B), wherein A and B are each different and each in a range of about 0.05 to about 0.95.

15. (Currently Amended) The semiconductor device of claim 12, wherein ~~the first group includes ZnO and CdO~~, and the means for carrying electron flow includes a third binary oxide from ~~the first group of~~ ZnO, CdO, SrO, CaO, and MgO and having an atomic composition of a first metal:second metal:third metal ratio of

A:B:C, wherein A, B, and C are each different and each in a range of about 0.025 to about 0.95.

16. (Currently Amended) The semiconductor device of claim 15, wherein the means for carrying electron flow includes the first binary oxide, the second binary oxide, the third binary oxide, and a fourth binary oxide selected from ~~within the first group~~ ZnO, CdO, SrO, CaO, and MgO and having an atomic composition of a first metal:second metal:third metal:fourth metal ratio of A:B:C:D, wherein A, B, C, and D are each different and each in a range of about 0.017 to about 0.95.

17. (Currently Amended) The semiconductor device of claim 12, wherein the means for carrying electron flow includes a first binary oxide and a second binary oxide selected from within one of ~~the~~ a first group of ZnO, CdO, SrO, CaO, and MgO and a second group of In<sub>2</sub>O<sub>3</sub> and Ga<sub>2</sub>O<sub>3</sub>.

18. (Currently Amended) The semiconductor device of claim 17 ~~12~~, wherein the means for carrying electron flow includes a first binary oxide and a second binary oxide selected from within one of the first group of ZnO, CdO, SrO, CaO, and MgO, the second group of In<sub>2</sub>O<sub>3</sub> and Ga<sub>2</sub>O<sub>3</sub>, and a third group of SnO<sub>2</sub>, GeO<sub>2</sub>, PbO<sub>2</sub>, and TiO<sub>2</sub>.

19. (Previously Presented) The semiconductor device of claim 18, wherein the means for carrying electron flow includes the first binary oxide, the second binary oxide, and a third binary oxide selected from within the third group SnO<sub>2</sub>, GeO<sub>2</sub>, PbO<sub>2</sub>, and TiO<sub>2</sub> and having an atomic composition of a first metal:second metal:third metal ratio of A:B:C, wherein A, B, and C are each different and each in a range of about 0.025 to about 0.95.

20. (Previously Presented) The semiconductor device of claim 19, wherein the means for carrying electron flow includes the first binary oxide, the second binary

oxide, the third binary oxide, and a fourth binary oxide selected from within the third group  $\text{SnO}_2$ ,  $\text{GeO}_2$ ,  $\text{PbO}_2$ , and  $\text{TiO}_2$  and having an atomic composition of a first metal:second metal:third metal:fourth metal ratio of A:B:C:D, wherein A, B, C, and D are each different and each in a range of about 0.017 to about 0.95.

21. (Original) The semiconductor device of claim 12, wherein the channel includes one of an amorphous form, a single-phase crystalline form, and a mixed-phase crystalline form.

22. (Original) The semiconductor device of claim 12, wherein at least one of the drain electrode, the source electrode, the channel, and gate electrode, and the gate dielectric are substantially transparent.

23-55. (Canceled)

56. (Currently Amended) A semiconductor device formed by the steps, comprising:

providing a drain electrode;

providing a source electrode;

providing a precursor composition including a first binary oxide selected from  $\text{SrO}$  and  $\text{CaO}$  and a second binary oxide selected from  $\text{CdO}$ ,  $\text{ZnO}$ , and  $\text{MgO}$  ~~a first group of  $\text{CdO}$ ,  $\text{SrO}$ ,  $\text{CaO}$ , and  $\text{MgO}$~~ ;

depositing a channel from the precursor composition contacting the drain electrode and the source electrode;

providing a gate electrode; and

providing a gate dielectric positioned between the gate electrode and the channel.

57. (Canceled)

58. (Currently Amended) The semiconductor device of claim ~~57~~ 56, wherein providing the precursor composition includes step for providing the precursor composition having an atomic composition of a first metal(A):second metal (B) ratio (A:B), wherein A and B are each different and each in a range of about 0.05 to about 0.95.

59. (Currently Amended) The semiconductor device of claim 56, wherein ~~the first group includes ZnO, and~~ providing the precursor composition includes step for providing a third binary oxide from ~~the first group of~~ ZnO, CdO, SrO, CaO, and MgO and having an atomic composition of a first metal:second metal:third metal ratio of A:B:C, wherein A, B, and C are each different and each in a range of about 0.025 to about 0.95.

60. (Currently Amended) The semiconductor device of claim 59, wherein providing the precursor composition includes step for providing a fourth binary oxide from ~~the first group of~~ ZnO, CdO, SrO, CaO, and MgO and having an atomic composition of a first metal:second metal:third metal:fourth metal ratio of A:B:C:D, wherein A, B, C, and D are each different and each in a range of about 0.017 to about 0.95.

61. (Currently Amended) The semiconductor device of claim 56, wherein providing the precursor composition includes step for providing the first binary oxide and the second binary oxide selected from within one of ~~the a~~ first group of ZnO, CdO, SrO, CaO, and MgO and a second group of In<sub>2</sub>O<sub>3</sub> and Ga<sub>2</sub>O<sub>3</sub>.

62. (Currently Amended) The semiconductor device of claim ~~56~~ 61, wherein providing the precursor composition includes step for providing the first binary oxide and the second binary oxide selected from within one of the first group of ZnO, CdO, SrO, CaO, and MgO, the second group of In<sub>2</sub>O<sub>3</sub> and Ga<sub>2</sub>O<sub>3</sub>, and a third group of SnO<sub>2</sub>, GeO<sub>2</sub>, PbO<sub>2</sub>, and TiO<sub>2</sub>.

63. (Original) The semiconductor device of claim 62, wherein providing the precursor composition includes step for providing the first binary metal oxide, the second binary metal oxide, and a third binary oxide from the third group  $\text{SnO}_2$ ,  $\text{GeO}_2$ ,  $\text{PbO}_2$ , and  $\text{TiO}_2$  and having an atomic composition of a first metal:second metal:third metal ratio of A:B:C, wherein A, B, and C are each different and each in a range of about 0.025 to about 0.95.

64. (Original) The semiconductor device of claim 63, wherein providing the precursor composition includes providing the first binary metal oxide, the second binary metal oxide, the third binary oxide, and a fourth binary oxide from the third group  $\text{SnO}_2$ ,  $\text{GeO}_2$ ,  $\text{PbO}_2$ , and  $\text{TiO}_2$  and having an atomic composition of a first metal:second metal:third metal: fourth metal ratio of A:B:C:D, wherein A, B, C and D are each different and each in a range of about 0.017 to about 0.95.

65. (Original) The semiconductor device of claim 56, wherein forming a channel includes:

step for vaporizing the precursor composition to form vaporized precursor composition; and

depositing the vaporized precursor composition using a physical vapor deposition technique.

66-69. (Canceled)

70. (Currently Amended) A display device, comprising:

a plurality of display elements configured to operate collectively to display images, where each of the display elements includes a semiconductor device configured to control light emitted by the display element, the semiconductor device including:

a drain electrode;

a source electrode;  
a channel contacting the drain electrode and the source electrode,  
wherein the channel includes a first binary oxide selected from SrO and CaO  
and a second binary oxide selected from CdO, ZnO and MgO ~~a first group of~~  
~~CdO, SrO, CaO, and MgO~~;  
a gate electrode; and  
a gate dielectric positioned between the gate electrode and the  
channel and configured to permit application of an electric field to the  
channel.

71. (Canceled)

72. (Currently Amended) The display device of claim ~~71~~ 70, wherein the  
channel includes an atomic composition of a first metal(A):second metal (B) ratio  
(A:B), wherein A and B are each different and each in a range of about 0.05 to about  
0.95.

73. (Currently Amended) The display device of claim 70, wherein ~~the first group~~  
~~includes ZnO, and~~ the channel includes a third binary oxide from ~~the first group of~~  
ZnO, CdO, SrO, CaO, and MgO and having an atomic composition of a first  
metal:second metal:third metal ratio of A:B:C, wherein A, B, and C are each  
different and each in a range of about 0.025 to about 0.95.

74. (Currently Amended) The display device of claim 73, wherein the channel  
includes a fourth binary oxide from ~~the first group of~~ ZnO, CdO, SrO, CaO, and  
MgO and having an atomic composition of a first metal:second metal:third  
metal:fourth metal ratio of A:B:C:D, wherein A, B, C, and D are each different and  
each in a range of about 0.017 to about 0.95.



75. (Currently Amended) The display device of claim 70, wherein the channel includes the first binary oxide and the second binary oxide selected from within one of ~~the~~ a first group of ZnO, CdO, SrO, CaO, and MgO and a second group of In<sub>2</sub>O<sub>3</sub> and Ga<sub>2</sub>O<sub>2</sub>.

76. (Currently Amended) The display device of claim ~~75~~ 70, wherein the channel includes the first binary oxide and the second binary oxide selected from within one of the first group of ZnO, CdO, SrO, CaO, and MgO, the second group of In<sub>2</sub>O<sub>3</sub> and Ga<sub>2</sub>O<sub>2</sub>, and a third group of SnO<sub>2</sub>, GeO<sub>2</sub>, PbO<sub>2</sub>, and TiO<sub>2</sub>.

77. (Original) The display device of claim 76, wherein the channel includes the first binary oxide, the second binary oxide, and a third binary oxide selected from within the third group SnO<sub>2</sub>, GeO<sub>2</sub>, PbO<sub>2</sub>, and TiO<sub>2</sub> and having an atomic composition of a first metal:second metal:third metal ratio of A:B:C, wherein A, B, and C are each different and each in a range of about 0.025 to about 0.95.

78. (Original) The display device of claim 77, wherein the channel includes the first binary oxide, the second binary oxide, the third binary oxide, and a fourth binary oxide selected from within the third group SnO<sub>2</sub>, GeO<sub>2</sub>, PbO<sub>2</sub>, and TiO<sub>2</sub> and having an atomic composition of a first metal:second metal:third metal:fourth metal ratio of A:B:C:D, wherein A, B, C, and D are each different and each in a range of about 0.017 to about 0.95.

79. (Original) The display device of claim 78, wherein at least one of the drain electrode, the source electrode, the channel, and gate electrode, and the gate dielectric are substantially transparent.